SOP for Collection of Sediment and Water Samples for Toxicity Testing

Summary of SOP Objectives

The purpose of this protocol is to describe the proper methods for the collection of sediment and water samples to be analyzed for toxicity to aquatic life. The sediment and water samples will be analyzed to assess any significant effects to aquatic test organisms at the EPA Region 6 Houston laboratory.

Operations to be Conducted

A. Water Sampling

Water sampling should always be conducted prior to sediment sampling. Water samples will be collected with a cubitainer by submerging approximately 0.5 meters under the surface and filling as needed. If water level is low in Coffee Creek, it may be best to use a siphon so as to not disturb the sediment. Samples will be placed on ice and shipped to EPA Region 6 Houston Laboratory for toxicity analysis.

B. Sediment Sampling

Sediment samples will be collected with a small ($0.04m^2$) double Ted Young Modified Van Veen or similar device. Once the survey vessel is on station and coordinates have been verified, the sediment grab will be deployed. When slack in the winch wire indicates the grab is on the bottom, the grab and captured sample will be brought back to the surface. Upon retrieval of the grab, the sample will be inspected for acceptability. If the sample is unacceptable, the grab will be emptied, rinsed, and redeployed.

A designated crew member will visually examine to ensure the grab if full, check for any signs of leakage and determine if the sample is good or not. The sampler may need to be deployed a couple of times before a good representative sample is obtained. The following grab sample acceptability criteria should be satisfied (PSEP criteria):

- The sampler is not over-filled so that sample is pressing against the top of the sampler
- Overlying water is present (indicates minimal leakage)
- The overlying water is not excessively turbid (indicates minimal sample disturbance)
- The sediment surface is relatively flat (indicates minimal disturbance or winnowing)
- The desired penetration depth was achieved (10 to 20 cm for a 10-cm deep superficial sample)

After successful collection, sediment from one compartment of the grab will be processed using the following procedure:

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- Remove the water overlying the sediment sample by slowly siphoning it off near one corner of the sampler.
- Record the physical description of the sample in the site logbook (texture, color, biological structures present)
- Photograph the sediment
- Remove any unrepresentative material from the sediment using a stainless-steel spoon or scoop and record this action in the site logbook. The types of materials considered unrepresentative should include large pieces (greater than 2 inches in diameter) of wood/bark, large shell fragments, man-made artifacts, and rocks.
- Don a clean pair of unpowdered (zinc-free) disposable gloves and collect the top 10 cm of sediment using a clean stainless steel spoon. Avoid the sediment in contact with the sides of the sampler and do not touch the sediment sample with ungloved hands.
- Excess sediment (and rejected sample) from the sampler should be carefully placed back into the water.
- Place the sediment collected in a pre-cleaned glass/stainless steel pan. Cover the pan immediately with aluminum foil to prevent airborne contamination. Place pan on top of ice in cooler between grabs.
- Repeat the sampling procedures until sufficient sediment is obtained for all the required analyses. For toxicity analysis, approximately 1 L (TBD) of sediment is needed. Be sure to record the total number of grabs taken at the sampling site.
- When sufficient amount of sample has been obtained, gently homogenize the sediment grabs by carefully stirring with the sampling spoon/scoop.
- From the mixing bowl, transfer the sediment to appropriate sample containers using a stainless steel spoon, replace the lid and apply custody seal and sample tag. NOTE: Leave ¼ in. headspace between the sample and the lid.
- Label the containers and sample tags. Place the sample container into an appropriate sized Whirl-Pak bag. Storage Procedure: Containers will be kept at 4C $\pm$ 2C (on ice) for the duration of the sampling trip.

C. Sample Handling Prior to Shipment to Laboratories

After collection, the samples will be immediately placed in properly labeled containers, and stored in coolers with sufficient ice to cover all samples. All samples should be overnight FedEx to the Houston laboratory,

Equipment Needed

A. Equipment and Capabilities provided by US EPA :

- Ice chests (transportation of samples after completion of survey)
- Containers with labels
- Field datasheets
- Testing of water and sediment samples at the USEPA Houston laboratory

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B. Equipment and Capabilities provided by USFWS :

- Boat/transportation
- Sediment sampler (double Van Veen or comparable device)
- Water sampler
- Backup sediment sampler (only if you think the primary one could possibly break)
- Stainless steel spoons and pans (pyrex)

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